

PUNCTURE SEALING COMPOSITION AND TIRE

Field of the Invention

The present invention is in the field of pneumatic tires.

5 Background of the Invention

Puncture sealing tubeless tires have previously been proposed, containing, in the area of the tire normally most subject to punctures (that is, the undertread or the area extending across the crown of the tire at least from one shoulder to the other), a layer of sealant composition which has plastic and adhesive qualities such that the composition
10 tends to stick to a puncturing object, and, when the puncturing object is withdrawn, tends to flow into the opening or puncture, forming a plug which seals the opening against loss of air from the tires. Unfortunately, it has proven difficult to provide a composition that would flow into the puncture hole and yet have sufficient viscosity to prevent it from flowing at elevated temperatures, up to 250 degrees Fahrenheit, such as exist in an
15 automobile pneumatic tire under operating conditions. The problem is complicated by the extreme centrifugal force to which the composition is subjected as the tire rotates at high speed, since such centrifugal force tends to cause the composition to flow into the central crown area, leaving the areas near the shoulders unprotected. Furthermore, it has proven difficult to provide a sealant composition that would retain this desired balance of
20 viscosity, plasticity, adhesion and conformability over an extended period of service.

A number of patents employ unvulcanized, partially vulcanized, or fully vulcanized elastomeric layers as puncture sealants in pneumatic tires. Among them are